#### **CERTIFICATE**

It is certified that Mr. Saurabh Gupta, Roll No. 2K13/MBA/517, student of Executive MBA, Delhi School of Management, has submitted the dissertation entitled, "PATENTS: Indicators of Technological Development", under my guidance towards the partial fulfilment of the requirement for the degree of Executive Master in Business Administration.

The dissertation is a bonafide work record of project work carried out by him under my guidance and supervision. His work is found to be outstanding and his discipline impeccable during the course of the project.

I wish him success in all his endeavors.

Prof. P. K. Suri
Head of Department
Delhi School of Management
Delhi Technological University

#### **DECLARATION**

I hereby declare, that this dissertation entitled: "Patents: Indicators of Technological Development" has been prepared by me and submitted to Delhi Technological University, Delhi in partial fulfillment of the requirements for the degree of Master of Business Administration – Executive. This is my original work done under the able guidance and supervision of Prof. P. K. Suri, HOD, Delhi School of Management, Delhi Technological University.

I further declare that this work has not been submitted to any other university for the award of any other degree, diploma or equivalent course.

**SAURABH GUPTA** 

2K13/MBA/517

### **ACKNOWLEDGEMENT**

At the very onset of this dissertation report, I will like to extend my sincere and heartfelt obligations towards all the personages who contributed towards my success in completing this dissertation. Without their active guidance, help, cooperation and encouragement, I would not have been able to bring the project to its current and desired shape.

I would like to thank my beloved parents, Late Shri. Arun Kumar Gupta and Smt. Chhaya Gupta, who have always been my strong sources of inspiration. They have always provided me the required moral support and helpful advices and suggestions, whenever I have looked upto them. It is only because of them, my life has always been full of abundant blessings.

I would like to devote my gratitude and thanks to my faculty and guide **Prof. P.K. Suri**, Head of Department, Delhi School of Management, Delhi Technological University, Delhi, for his valuable guidance, constant encouragement and helpful discussions throughout the course of this work. Obviously, the progress I have attained would have been uncertain without his guidance.

At last but not the least I would like to express my vote of thanks to my brothers and friends for their criticism, support and encouragement.

ECHNOLOGICAL

Best regards,

SAURABH GUPTA

2K13/MBA/517

#### **ABSTRACT**

Patent data and analysis serves as a rich and fruitful platform of providing information to be used for comparative studies, analysis and trends determination. In recent years, these data sets are considered as one of the major indicators and drivers for enhancing country & national competitiveness. It has also been seen that many of the developed countries have been active in enforcing and emphasizing on the Intellectual Property protection. There have been many indicators proposed in the previous statistical analysis which have focused on patent application counts. However, the same have not been able to cover broad dimensions of patenting research and its impact analysis for the country's economy.

The objective of the current research is to showcase the various indicators that can be developed from patent information and use them in an amalgamated manner to rank the technological development of 30 OECD member countries till 2013. One of the patenting indicators is analyzed in detail at the global & regional level. Further, patenting trends in the upcoming and recently developing ICT domain are analyzed. The study concludes by comparing these countries with each other and also as per their ranking in 2007 conducted in the past.

# **TABLE OF CONTENTS**

1. INT	FRODUCTION	1
1.1	Intellectual Property - Outline	1
1.1.1	Intellectual Property - Definition	1
1.1.2	Subjects protected under IP regime	1
1.2	Copyright	1
1.2.1	Definition	1
1.2.2	Type of works covered under copyright	
1.2.3	How to protect works under Copyright?	
1.3	Related Rights	
1.3.1	Definition	2
1.3.2	Copyrights versus Related Rights	2
1.3.3	Rights granted in related rights?	3
1.3.4	Need for related rights	3
1.4	Trademarks	3
1.4.1	Definition	3
1.4.2	Different type of signs used as trademarks	3
1.4.3	Type of trademarksImportance of trademarks	4
1.4.4	Importance of trademarks	4
1.4.5	How to protect your trademark from illegal use?	4
1.4.6	Protection offered by trademarks	5
1.5	Geographical Indications	5
1.5.1	Definition	5
1.5.2	Trademark versus Geographical Indication	5
1.5.3	Protection of Geographical Indication	5
1.6	Industrial Designs	6
1.6.1	Definition	6
1.6.2	Protection of industrial designs	6
1.6.3	Protection provided by industrial designs	6
1.6.4	Need for protection of industrial designs	6
1.7	Patents	7
1.7.1	Definition	7
1.7.2	Type of inventions protected by patents	7
1.7.3	Invention Protection – Methodology	

1.7.4	Process of obtaining a patent for an invention	8
1.7.5	Rights of a patent owner	8
1.7.6	Patent Protection – How extensive is it?	8
1.7.7	Need for protecting inventions with patents	9
1.7.8	Types of Patent Applications	9
1.7.8.1	National Patent Application	10
1.7.8.2	International Patent Application	10
1.7.8.3	European Patent Application	10
2. LITE	ERATURE REVIEW	12
2.1	Invention, Technology & Invention Relationship	12
2.1.1	Announcement of New Products	14
2.1.2	Patents	15
2.1.3	Patent Citations	
2.1.4	Research & Development Inputs	16
2.1.5	Statistical Association of New Product Announcements, Patents and R&D	17
3. RES	SEARCH METHODOLOGY	18
4. DA	ΓA ANALYSIS	19
4.1	Data Collection Techniques & Sources	19
4.2	Proposition of Distinct Patenting Indicators	
4.3	Patenting Performance of Countries & Regions	
4.3.1	Triadic Patent Families	
4.3.1.1	Number of triadic patent families and growth rate	25
4.3.1.2	Share of countries in triadic patent families 2013	
4.3.1.3	Ratio of triadic patent families to industry financed GERD	28
4.4	Patenting Activity at Regional Level	31
4.4.1	North America	33
4.4.2	Europe	34
4.4.3	Asia Pacific	35
4.5	Patenting New Technologies (in ICT)	
4.6	Amalgamated Indicator	44
4.7	Conclusions	47
4.8	Limitations	48
4.9	Future Scope	48
5. BIB	LIOGRAPHY	49
6 RFF	FRENCES	50

# LIST OF TABLES

2.1	Indicators of Science and Technology	13
4.1	Distinct Indicators and their significance in patenting performance	21
4.2	Sources of Data Collection for proposed distinct indicators	23
4.3	Statistical Analysis of Distinct Indicators	24
4.4	Definitions of IPC Classifications considered for ICT Applications	40
4.5	Weights assigned to distinct indicators	45
4.6	Ranking of OECD member countries on amagalmated indicator	46



# **LIST OF FIGURES**

4.1	1st level hierarchy of Performance Indicator	. 20
4.2	Number of triadic patent families and growth rate	. 25
4.3	Share of countries in triadic patent families	. 26
4.4	Trends in triadic patent families	. 27
4.5	Triadic patent families per million population	. 28
4.6	Ratio of triadic patent families to industry financed GERD	. 29
4.7	Filed patent applications & growth rate at PCT	. 32
4.8	PCT regional level geographic concentration index	. 33
4.9	PCT Applications filed at North America	. 34
4.10	Filed PCT applications in Europe	. 35
4.11	Filed PCT Applications in Japan/Korea	. 36
4.12	Filed PCT Applications in Australia	
4.13	ICT patents share in total patents	. 40
4.14	Share of country's ICT patents relative to ICT share in total patents	. 41
4.15	Share of economies in ICT patents	
4.16	Share of countries in ICT patents	. 43